

# **Kadi Sarva Vishwavidyalaya, Gandhinagar**

**PART-1 (BASIC AWARENESS AND APTITUDE ON RESEARCH) – 50 Marks**

## **PART-2 Syllabus for Ph.D Entrance Test: Computer Engineering** **(Marks-50)**

### **Unit 1: Engineering Mathematics:**

Discrete Mathematics (Set, Relation & Function, Principles of Mathematical Induction, Propositional Logic, Groups and Boolean algebra, Graphs and Trees), Linear Algebra (Algebra of matrices, determinants, systems of linear equations, Eigen values/vectors), and Introduction to Probability.

### **Unit 2: Digital Logic & Computer Organization**

Boolean algebra, circuits (combinational and sequential), number representation, computer arithmetic. Cache and main memory, CPU control design, Instruction pipelining, Machine instructions and addressing modes. Secondary storage, structured memory design for parallel systems.

### **Unit 3: Programming, Data Structures and Algorithms**

Procedural and object-oriented programming, Linear/Non-linear data structures, searching, sorting, hashing, complexity of algorithms, tree, graph.

### **Unit 4: Operating Systems**

Process, Thread, IPC, Concurrency, Synchronization, deadlocks, CPU scheduling, memory management, virtual memory, file systems.

### **Unit 5: Computer Networks**

Various protocols and functions of each layers specified in OSI and TCP/IP protocol suits along with their intercommunication.

### **Unit 6: Database Management Systems**

ER model, relational model, normalization forms, SQL, integrity, redundancy, deadlock. Transaction and concurrency control

### **References:**

For references of above mentioned curricula, one may refer to the references mentioned within the individual courses available on the site of LDRP-ITR.